

TECHNICAL MEMORANDUM

TO: Carl Bach, The Boeing Company

FROM: *cmg* Colette Griffith and *KSH* Kristy J. Hendrickson, P.E.

DATE: November 18, 2010

RE: **PLANNED SAMPLING TO INDICATE PRESENCE OF PCBs IN PAINT
NORTH BOEING FIELD
SEATTLE, WASHINGTON**

This technical memorandum provides information on wipe sampling activities that are planned at North Boeing Field (NBF) in an effort to identify paint that contains polychlorinated biphenyls (PCBs). Results of the North Lateral Source Evaluation (NLSE, Landau Associates 2010a) indicate PCBs are present in some paint at NBF. The Boeing Company (Boeing) conducted abatement of materials in the North Lateral area of NBF including paint in October 2010 (Landau Associates 2010b).

On October 22, 2010, Boeing collected wipe samples from three areas of paint known to contain PCBs, based on paint chip sampling conducted during the NLSE. PCBs were detected in each wipe sample. Based on the results of the wipe samples, Boeing plans to implement a wipe sampling investigation with the goal of identifying other locations where PCBs are present in paint at concentrations at or greater than 50 milligrams per kilogram (mg/kg) at NBF and to mobilize abatement activities accordingly. Wipe sampling will allow Boeing to identify areas for abatement of PCB-containing paint removal more efficiently and over a larger area of the NBF property compared to continued collection of paint chip samples. Paint chip samples may still be collected in areas where wipe sample results do not seem representative of building age or other paint characteristics. Paint chip samples may also be collected periodically in conjunction with the wipe samples as a quality assurance measure to confirm the wipe samples are representative of PCB concentrations in the paint and to provide additional information on the minimum PCB paint concentration detectable by wipe sampling. The results of the initial wipe samples and planned future wipe sampling activities are discussed in the sections below.

WIPE SAMPLE RESULTS

Results of the wipe samples and the corresponding paint chip PCB concentrations are presented in the table below:

Wipe Sample ID:	WIPE01-NLS	WIPE02-NLS	WIPE03-NLS
Paint Chip Sample ID:	NLS-PAINT65	NLS-PAINT61	NLS-PAINT83
Total PCBs in Wipe Sample (µg)	8.4	1.8	0.5
Total PCBs in Paint Chip Sample (mg/kg)	250	136	46

This data is also summarized in Attachment 1 of this technical memorandum. As shown above, wipe samples were collected from painted areas with known PCB concentrations in paint ranging from 46 mg/kg to 250 mg/kg. PCBs were detected in each of the wipe samples collected from these three areas at concentrations ranging from 0.5 micrograms (μg) from the area with the lowest PCB concentration in paint, to 8.4 μg from the area with the highest PCB concentration in paint. These results indicate that wipe samples will function as indicator samples to identify PCBs in paint at concentrations of 46 mg/kg or greater. Boeing will use this sampling methodology to identify areas for PCB paint abatement.

PLANNED SAMPLING ACTIVITIES

Wipe sampling locations will be identified in the field based on visual appearance or age similar to areas of known detected concentrations encountered during the NLSE. Field personnel will attempt to collect wipe samples that are representative of the different colors, types, and ages of paint present in the North Lateral on various building structures and equipment suspected to be installed prior to 1980. After a painted structure or piece of equipment is identified for sampling, the sample area will be selected based on where the paint may have the potential to chip, peel or be subject to degradation. Although comprehensive paint chip sampling (and in some cases PCB-paint abatement) has already occurred in the North Lateral area of NBF, wipe sampling in the North Lateral area will aid in further delineating potential PCB-paint abatement areas. Field personnel will conduct wipe sampling in the other storm drain lateral areas of NBF (North-Central, South-Central, South, and Parking Lot Area/Building 3-380 Area) following completion of sampling activities in the North Lateral area.

When the sampling location has been identified in the field, an area 10 centimeters (cm) by 10 cm will be isolated using a clean cardboard or metal template. The sampler, wearing a clean pair of disposable sterile gloves, will remove the laboratory-prepared wipe (i.e., sterile gauze pad soaked with hexane) from its packaging container and firmly wipe the marked surface area to collect a sample. The wipe sample will be collected by wiping first in one direction and then again 90 degrees offset from the original wiping direction to optimize sample collection coverage. After the sample has been collected, the gauze will be placed in an 8-oz. glass sample jar, labeled, and stored on ice.

Samples will be transported to Analytical Resources, Inc., (ARI) of Tukwila, Washington, within 24 hours of sample collection. Samples will be analyzed for PCB aroclors by U.S. Environmental Protection Agency (EPA) Method 8082. The anticipated reporting limit for PCB aroclors in wipe samples is 0.1 micrograms per sample [$\mu\text{g}/\text{sample}$ (100 cm^2)]. Actual reporting limits may vary depending on the type of sample collected and ability of the laboratory to analyze compounds within the specific sample material. Analyses will be conducted on a standard turnaround time. All samples submitted for analysis will be accompanied by a chain-of-custody form. Paint will be removed from all locations where total PCBs are detected at any concentration above the target low-level reporting limit in

the wipe sample (0.1 µg) under the direction of the Boeing Abatement Team. As discussed above, paint chip samples may be periodically collected in conjunction with the wipe samples to confirm that the wipe sample results are representative of PCB concentrations in paint.

HEALTH AND SAFETY PLAN

The project health and safety plan (HASP) provided in Appendix A of the Source Evaluation Work Plan (Work Plan, Landau Associates 2010c) will be applicable to all activities performed under this technical memorandum. All personnel performing the work will follow the procedures described in this HASP.

SCHEDULE

Wipe sampling is anticipated to be completed by the end of the first quarter of 2011. A technical memorandum presenting the wipe sampling data results and the planned paint abatement activities is planned to be submitted to the EPA and Washington State Department of Ecology (Ecology) about the beginning of May 2011. Additional paint abatement activities are anticipated to take place in the second and third quarters of 2011.

REFERENCES

Landau Associates. 2010a. *Report, North Lateral Storm Drain System Evaluation of Potential Sources, North Boeing Field, Seattle, Washington*. Prepared for The Boeing Company. October 13.

Landau Associates. 2010b. Technical Memorandum to Carl Bach, The Boeing Company, re: *PCB Paint Abatement Activities, North Boeing Field, Seattle, Washington*. Colette Griffith and Kristy J. Hendrickson, Landau Associates. November 17.

Landau Associates. 2010c. *Work Plan, North Lateral Storm Drain Evaluation of Potential Sources, North Boeing Field, Seattle, Washington*. July 2.

Data Summary

TABLE 1
WIPE SAMPLE ANALYTICAL DATA
NORTH BOEING FIELD

	WIPE01-NLS RS76A 10/22/2010	WIPE02-NLS RS76B 10/22/2010	WIPE03-NLS RS76C 10/22/2010
PCBs (µg)			
Method SW8082			
Aroclor 1016	0.5 U	0.1 U	0.1 U
Aroclor 1242	0.5 U	0.1 U	0.1 U
Aroclor 1248	2.0 U	0.2 U	0.1 U
Aroclor 1254	8.4	1.5	0.2 U
Aroclor 1260	1.0 U	0.3	0.5
Aroclor 1221	0.5 U	0.1 U	0.1 U
Aroclor 1232	0.5 U	0.1 U	0.1 U
Total PCBs	8.4	1.8	0.5

U = Indicates the compound was undetected at the reported concentration.

Bold = Detected compound.

NOTES:

WIPE01-NLS: Collected adjacent to PAINT65 on the north wall of the 3-322 building (PCBs at 250 mg/kg in paint).

WIPE02-NLS: Collected adjacent to PAINT61 on the metal support pillars at the southeast corner of the 3-334 building (PCBs at 136 mg/kg in paint).

WIPE03-NLS: Collected adjacent to PAINT83 on the yellow bollards located on the north side of the storage hangar located north of Building 3-365 (PCBs at 46 mg/kg in paint).